DOCUMENT RESUME

ED 418 973 SP 037 940

AUTHOR Jensen, Jacquelyn W.
TITLE Teacher Candidates' Conceptions of Teaching and Learning: A Review.
PUB DATE 1998-04-15
NOTE 95p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Diego, CA, April 13-17, 1998).
PUB TYPE Information Analyses (070) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Diversity (Student); Elementary Secondary Education; Higher Education; Instructional Program Divisions; *Multicultural Education; *Nontraditional Education; Preservice Teacher Education; *Sex Differences; *Student Teacher Attitudes

ABSTRACT

The purpose of this paper is to provide a best-evidence synthesis of studies on preservice teachers' conceptions of teaching and learning and to describe their implications for teacher education. The studies that focus on preservice teachers' conceptions were grouped according to five themes. They include: (1) general orientations to teaching and education; (2) perspectives concerning diversity and multicultural education; (3) elementary and secondary contrasts; (4) gender constrasts; and (5) traditional and nontraditional contrasts. Although some patterns emerge within each theme, teacher educators must exercise caution in generalizing these findings to all teacher candidates. Within some of the presented studies, preservice teachers' conceptions of teaching and learning vary considerably. (Contains 37 references.) (AA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 418 973

Teacher Candidates' Conceptions of Teaching and Learning: A Review

Jacquelyn W. Jensen

University of Utah

April 15, 1998

Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

SB 37440

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J. Jensen

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

Author Note

Jacquelyn W. Jensen is a doctoral candidate in the Department of Educational Studies at the University of Utah. Her areas of interest include teacher education, teacher thinking, conceptual change, family and consumer sciences education, human development, and nutrition. Correspondence concerning this article should be addressed to the author at: 3934 West 7925 South, West Jordan, Utah 84088.

This paper was initially written as a section in the author's dissertation literature review. Nancy Winitzky's comments on earlier drafts warrant special thanks.

Abstract

Teacher educators must understand the research findings on teacher candidates' conceptions of teaching and learning to effectively influence what their students learn. The purpose of this paper, therefore, is to provide a best-evidence synthesis of studies on preservice teachers' conceptions of teaching and learning, and to describe their implications for teacher education.

Teacher Candidates' Conceptions of Teaching and Learning

Many teacher educators operate according to the assumption that teacher candidates' actions within the classroom are associated with their knowledge of teaching and learning (Artiles, Mostert, & Tankersley, 1994). Consequently, helping preservice teachers construct an organized and detailed conceptual understanding concerning the knowledge base within education is a central aim of teacher education. Because meaningful learning is influenced by what teacher candidates already know (Ausubel, 1968; Calderhead & Robson, 1991; Resnick, 1989), teacher educators must have a clear understanding of their students' background knowledge. The purpose of this paper, therefore, is to synthesize studies on preservice teachers' conceptions of teaching and learning, and to describe their implications for teacher education.

I first explain the criteria I used to select studies. A discussion of several considerations will then help to position the studies selected for inclusion. These considerations include: (a) a clarification of the terminology used in differing studies, (b) a brief overview of three sources of experience, and (c) differences in the timing of studies.

Following a discussion of the above considerations, I have grouped studies that focus on preservice teachers' conceptions according to five themes. They include: (a) general orientations to teaching and education, (b) perspectives concerning diversity and multicultural education, (c) elementary and secondary contrasts, (d) gender contrasts, and (e) traditional and nontraditional contrasts. Although some patterns emerge within each theme, teacher educators must exercise caution in generalizing these findings to all teacher candidates. Within some

studies reported here, preservice teachers' conceptions of teaching and learning vary considerably. Finally, I delineate the implications of this synthesis for teacher education.

Study Inclusion Criteria

An examination of the literature regarding preservice teachers' conceptions of teaching and learning began by reading seminal chapters within several books. These books include Handbook of research on teacher education: A project of the association of teacher educators, The teacher educator's handbook: Building a knowledge base for the preparation of teachers, Exploring teachers' thinking, Teachers' professional learning, and Constructivism: Theory, perspectives and practice. At the same time, I scrutinized the bibliographies of several relevant studies, such as, Derry (1996), Gelman (1996), Hollingsworth (1989), Holt-Reynolds (1992), Weinstein (1989), and Winitzky and Kauchak (1997) for related studies.

I then generated combinations of key words and completed a computer search of ERIC and Education Index for the years 1981 through 1996. While reading ERIC abstracts, I noted and searched additional key words. Examples of keywords used in these searches include: (a) teacher socialization, (b) preservice teacher socialization, (c) teacher growth, (d) teacher change, (e) preservice teacher change, (f) teacher beliefs, (g) preservice teacher beliefs, (h) beginning teacher learning, (i) preservice teacher learning, and (j) teacher thinking.

Following the database searches, I completed hand searches of five journals for the years 1992 through 1996. These journals included Teaching and Teacher Education, Journal of Teacher Education, American Educational Research Journal, Review of Educational Research, and Journal of Educational Psychology. Two education professors (Nancy Winitzky, Julie Gess-Newsome) at the University of Utah also suggested several studies

contained in assorted journals.

I limited the articles selected for consideration to those that specifically center on preservice teachers rather than teachers generally. Although some studies are reviewed that include a cross-section of both, the findings relative to teacher candidates are the focus. Studies presented at meetings were excluded in favor of published studies because these studies are generally subjected to more rigorous standards during peer review.

After these exclusions, I examined all articles obtained holistically to exclude studies of marginal quality. Indicators of methodological quality such as the sample size, triangulation, study duration, and instrument validity and reliability were appraised. I made a decision concerning inclusion on a study by study basis. Imagine, for example, that a study contained a small sample size and utilized only two methods of data collection. Its prospect of being included increased if it extended over more than one semester or quarter, and utilized an instrument(s) in which validity had been firmly established. Finally, discussion occurred with an expert on teacher thinking to critique and come to consensus regarding the methodological quality of several studies.

Research conducted by Brousseau and Freeman (1984) is an example of a study that I excluded from this review. The purpose of the study was to investigate the perceptions that preservice teachers have about "their role as teachers" (p. 1). Five to six teacher candidates for each of five programs participated in the study upon entrance into the programs. Researchers used an interview to collect the data.

I excluded the study because (a) reliability checks for assigning responses to categories were absent, (b) the authors suspected that differences in the personalities of the seven

interviewers influenced the responses, (c) the time of the interviews during the methods course was not held constant, (d) the sample size is small, (e) researchers did not employ means to triangulate the data, and (f) this synthesis includes studies of higher methodological quality from the same institution that examine preservice teachers' conceptions.

Positioning the Studies

Clarification of Terminology

Because researchers use a range of words to describe preservice teachers' conceptions of teaching and learning, clarification of the terminology used within the literature is necessary. Beliefs, attitudes, and knowledge are three of these terms. For some authors, these terms have precise meanings, while others use them interchangeably. To clarify the confusion, Richardson (1996) makes some important distinctions between them.

Attitudes can be thought of as predispositions linked to affect, characterized by a favorable or unfavorable response. Beliefs, by contrast, are thought to be more cognitive in nature, and are identified with understandings and propositions. Beliefs reside in clusters, and those that are the most central are thought to be the most difficult to change.

Richardson (1996) also distinguished between beliefs and knowledge. She maintains that a belief is an idea that an individual deems true which need not be proved with evidence. Knowledge, in contrast, "implies epistemic warrant" (p. 104). Helping preservice teachers to transform beliefs into knowledge is, therefore, a goal of teacher education. Although I accept the differentiations articulated by Richardson, the terms used by the researcher(s) have been retained as each study is reviewed.

Three Sources of Experience

Teacher candidates' attitudes, beliefs and knowledge about teaching and learning are formed through various kinds of experience. Richardson (1996) describes three categories of experience examined in the learning to teach literature. These categories include "personal experience, experience with schooling and instruction, and experience with formal knowledge" (p. 105).

Many aspects of personal experience influence the way that preservice teachers approach teaching. Some of these include gender, religious affiliation, geographic region, and past decisions.

Life history and socialization researchers cite experience over many years with schooling and instruction as equipping preservice teachers with strong beliefs before they enter teacher education. According to this group of researchers, the knowledge base within teacher education has little influence on preservice teachers' actions while in the classroom. This limited influence is attributed to the combination of personal experience, spending years in classrooms as students, and student teaching.

Richardson (1996) describes experience with formal knowledge as understandings of subject matter that have consensus within the scholarly community. The formal knowledge that specifically influences preservice teachers includes knowledge of subject matter, how students learn it, and pedagogical knowledge. Studies show that preservice teachers' understanding of subject matter affects the way that they plan. Those teacher candidates who have a coherent conceptual understanding of subject matter plan differently from those without such an understanding.

Pedagogical knowledge, that is, knowledge of teaching practices such as "classroom

management, models of teaching, and classroom environment," is often taught to students before their student teaching experience (p. 106). Many life history and socialization researchers maintain that pedagogical knowledge has the least influence on practice while others (Clift, 1987; Grossman, 1990; Grossman & Richert, 1988) cite considerable variation in the actions of those who have and have not received such instruction.

Differences in Timing

Preservice teachers' experience with formal knowledge differs substantially across studies because of the timing of studies during teacher education programs. Some studies depict most students enrolled in their first education course. Others report that students have taken a few education courses. Assorted studies describe students' conceptions at the end of their program. Just as the point at which a study is conducted will influence its findings, so must the differences in program structure. For example, some programs integrate field experience throughout course work while others position it largely at the end. Unfortunately, studies of preservice teachers' conceptions give few details concerning program structure.

Preservice Teachers' Conceptions

General Orientations to Teaching and Education

Although preservice teachers' conceptions of teaching and education are diverse, several themes surface. These themes include: (a) a feeling of optimism or confidence that preservice teachers need not know more about teaching to be successful, (b) teaching as a matter of transmitting important facts for learners to memorize, (c) experience in the classroom as a valuable source of professional knowledge, and (d) a public service orientation toward helping children (For a summary of each study, see Table 1).

Weinstein (1988) explored 118 elementary education majors' expectations about their first year of teaching. Participants' had completed all formal course work and were about to begin student teaching. Forty-two students indicated some form of prior teaching experience. All completed a 33-item questionnaire based on frequent problems of beginning teachers at a student teacher orientation session.

The study showed that teacher candidates believed tasks would be much easier for themselves than for their peers. They were very optimistic about tasks with which beginning teachers have the greatest difficulty, i.e., organization and management. Preservice teachers who had some form of prior teaching experience were even more optimistic. Weinstein concluded that teacher candidates' unrealistic optimism contributes to reality shock, and may lead them to see no need to "seriously engage in teacher preparation" (p. 39).

Book, Byers, and Freeman (1983) also found preservice teachers to be highly confident in their teaching abilities. Participants included 473 preservice teachers enrolled in two introductory education courses. Data collection occurred using a questionnaire that dealt with preservice teachers "pre-college and college experiences, career aspirations, perceptions of the role of the teacher and demographic characteristics" (p. 9).

The study suggested that teacher candidates were so confident in their abilities that they did not expect to learn very much about teaching. The most vital sources of professional knowledge for candidates included on-the-job training and supervised teaching experiences. Candidates listed instructional methods and content area courses next in importance. They viewed educational psychology and foundations courses as the least worthwhile.

Further, participants saw enhancing self-concept as more important than either

promoting academic achievement or creating an environment where a diverse student population could work and learn together. They did not view achievement as a way to increase students' self-concepts. Book et al. (1983) note the "perceived lack of importance of maximizing student achievement by preservice teachers, coupled with their confidence in their ability to teach and their devaluing of pedagogy courses, is perhaps the most significant finding of this study" (p. 12).

Three years later, another study conducted at Michigan State University similarly revealed that entering preservice teachers were confident in their current abilities to teach. The study sought to describe teacher candidates in five teacher education programs. Data collection occurred at the beginning and end of students' programs, and included both short term and long term follow-ups. West (1986) reported the entry questionnaire data from 545 preservice teachers.

Although West reports teachers' orientations and beliefs about many aspects of teaching, three are consistent with other studies. Eighty-five percent of teacher candidates reported being confident "in their ability to succeed now as a teacher" (p. 20). Although approximately 50% of the respondents rated all sources of professional knowledge as crucial for teaching, over 80% of the respondents rated classroom experience as crucial. Finally, candidates cited an orientation toward helping children as an important motivation for selecting teaching as a career.

In contrast to West (1986), Mahlios, Marc and Maxson (1995) reported that teacher candidates view teaching as a matter of transmitting important facts for learners to memorize. They explored 134 students' root beliefs about school, life and childhood. Students enrolled in

an initial course for elementary education majors answered a 6-part questionnaire. The questionnaire was more structured on some parts than others, and allowed for the construction of metaphors.

Mahlios et al. (1995) found that although teacher candidates enjoyed learning in groups, they planned to teach didactically. Similarly, their belief that school should be a nurturant place conflicts with their belief that children should be submissive, compliant, and happy. Only 21 of the students saw the ideal teacher as having an academic focus besides affective traits. Finally, they believed that development is genetic, a conception that could conflict with programs that emphasize the social construction of knowledge.

Despite the findings just described, a study conducted by Schmidt and Kennedy (1990) illustrates the need for caution in trying to generalize specific conceptions to all teacher candidates. As part of a longitudinal study of Teacher Education and Learning to Teach (TELT), these researchers examined teacher candidates' beliefs about subject matter and teaching responsibilities. Students completed a questionnaire before participation in teacher education (n=476, writing; n=481, mathematics; n=471, teaching responsibilities). Participants indicated agreement or disagreement along a 7-point scale with statements representing dichotomies between function and process. The researchers noted that "probably the most remarkable finding from this study is the wide diversity of beliefs held by . . . teacher candidates" about the nature of writing, mathematics, and teaching responsibilities (p. 8). The belief patterns that did stand out included "both poles of the education dichotomy" (p. 9).

Likewise, Gurney (1995) also reported variability in preservice science teachers'

conceptions of teaching and learning. Participants completed a questionnaire that allowed for the construction of metaphors on the first day of a methods course. One hundred thirty students responded, and metaphors from 113 participants were considered usable.

Mood was one of the ways that the researcher classified the metaphors, and it included three dimensions. They are: (a) effort, either active or passive involvement of the teacher and learner (b) affect, either positive, negative or neutral, and (c) control, either teacher-centered, student-centered, shared, or unspecific. The effort within the majority of metaphors was active (86.7%) rather than passive (13.3%). In terms of affect, the largest number of metaphors were neutral (49.6%), followed by positive (37.2%), and negative (13.3%). Teacher-centered control (48.7%) was the most evident form of control, followed by shared control (23.9%), unspecified control (15.9%), and student-centered control (11.5%).

Perspectives on Diversity and Multicultural Education

Besides examining teacher candidates' general orientations to teaching and learning, several studies also explore their perspectives on diversity and multicultural education. Within these studies, conceptions vary widely within groups of preservice teachers. The most noticeable pattern is that candidates do not know very much about teaching diverse groups of students. In most studies, the researchers indicate that the theme of teaching diverse groups of learners is not integrated across courses within teacher education programs (For a summary of each study, see Table 2).

Harrington and Hathaway (1995) examined 27 preservice teachers' beliefs about multicultural education and their responsibility for implementation. They analyzed the discussion that occurred over a period of 1 month during a structured computer conferencing

activity. The data suggested that teacher candidates' beliefs about multicultural education, their role, and inherent difficulties in dealing with diversity varied dramatically. Many saw presenting multiple points of view as important while others doubted their ability to do so because of lack of knowledge and time. Although some saw implications for pedagogy and teaching students to think critically, there was some confusion about what multicultural education is and the pedagogical implications. Many did not connect issues, actions, and larger implications.

Similarly, Goodwin (1994) reported variability in preservice teachers' conceptions of multicultural education. This researcher investigated eighty preservice teachers' perceptions concerning multicultural education near completion of the program. Analysis of the data provided on an open-ended questionnaire suggested that teacher candidates exhibited extreme variability in their perceptions about the aims and goals of multicultural education. Their perceptions ranged from superficial to meaningful. The concerns they had about multicultural education suggested that it was seen as reactive education dependent on the context rather than as a perspective that guides decisions.

A limited knowledge of research findings on multicultural education, and doubt in their abilities to teach diverse student populations also surfaces in the literature. For instance, Ross (1992) examined six teacher candidates perspectives on diversity during a course entitled Research in Elementary Education, a field placement seminar. Participants still had 2 years of course work following this class. A research paper, three reaction papers, a personal theory paper, journal entries, observations, and interviews provided data for the study.

Ross found that two participants opposed teaching diverse learners, and believed they

had cultural deficits because of their home environments. Three participants recognized the complexity of diversity but tied interventions to the teacher's attitude rather than specific actions. One participant had a clear idea of pedagogy but felt that he needed to teach a more homogeneous group of students to automatize some aspects of teaching before moving to a diverse setting.

Barry and Lechner (1995) too found that teacher candidates lack knowledge and express little confidence regarding the implementation of multicultural education. In an elementary methods course, they examined 73 preservice teachers' attitudes and awareness of multicultural education using a 3-part questionnaire. Students enrolled in the course had taken two to three education courses before the study. The analysis showed that although preservice teachers were aware of the issues addressed by multicultural education, they knew little about the findings of research on teaching diverse students. They expressed doubt in their abilities to implement multicultural education effectively and wanted to know more.

Not only do studies suggest a lack of knowledge about interventions, they also suggest limited awareness of inequity. From a study of 21 preservice teachers', McCall (1995) described two students' conceptions of multicultural teaching to better understand how their life experiences influenced learning. McCall analyzed class session audiotapes, her own journal entries written after listening to each audiotape, student journals, student interviews, and student responses to her analysis. She found that the two preservice teachers at the beginning of the course had little awareness of how content and teaching materials inequitably portray diverse groups. These candidates were unaware that the content advanced a white, male perspective, and that it did not represent many groups.

A study by Avery and Walker (1993) also suggests that many candidates have limited awareness of inequity. In a study with 152 preservice teachers just entering the college of education, these researchers examined their perceptions of ethnic and gender differences in academic achievement. Over a period of 40 minutes, participants responded in writing to two questions. The analysis examined teacher candidates' explanations of the disparity, and the quality of their explanations.

On a 4-point scale ranging from simple (1) to complex (4), the quality of 80% of the responses was coded as a 1 or 2. Preservice teachers were more sympathetic in terms of gender than they were of ethnic differences. Generally, teacher candidates associated ethnic disparity in academic achievement with group values or ethnic culture, whereas they identified societal attitudes as the basis of disparity for gender. In addition, 75% of respondents viewed schools as adding to gender disparity. Only 56% of respondents saw schools as contributing to the problem of ethnic inequity.

Finally, in a longitudinal study of pupils who grew up to be teachers, Lindblad and Prieto (1992) examined the experiences of people who chose teaching compared with those who chose other occupations. They focused attention on the social position and the perspectives on schooling of 1029 participants. In the 1970's, pupils were studied when in grades one through nine, and then in the 1980's the researchers surveyed 671 participants from the earlier sample in terms of their careers and social class.

Lindblad and Prieto found that the 34 participants who became teachers were over achievers when comparing their grades and test scores with those of others in the sample. Their perspectives can be characterized as being middle class, traditional, and patriarchal.

They did not relate with working class perspectives of resistance.

Elementary and Secondary Contrasts

Studies that have examined differences between elementary and secondary teaching majors report both similarities and differences. The similarities that surface include: (a) unrealistic optimism regarding teaching abilities, (b) a focus on interpersonal relationships at the expense of understanding subject matter and acquiring learning strategies, (c) a strong service orientation, and (d) highly valuing classroom experience and content area course work as important sources of professional knowledge. One conception associated more with elementary education majors includes being child-centered. Conceptions associated more with secondary education majors include being oriented toward subject matter, and possessing more confidence. In addition, secondary education majors tend to attribute a wider variety of factors to account for ethnic and gender disparity in academic achievement than do elementary education majors (For a summary of studies, see Table 3).

Weinstein (1989) investigated 113 students' conceptions in an introductory level education course on the first day of class. Students responded to a questionnaire consisting of both open-ended and fixed-response questions. The principal finding among both elementary and secondary majors was "'unrealistic optimism' - the tendency to believe that the problems that plague others won't happen to them" (p. 57).

The self-ratings of elementary education majors were highest on interpersonal relationships and lowest on instructional responsibilities. Secondary education majors had equal ratings across all three domains (i.e., organization and management, interpersonal relationships, instruction). In explaining the self-ratings, candidates approached working with

children with excitement and saw it as enjoyable. This excitement was expressed to a greater degree by elementary education majors, whereas secondary education majors expressed more confidence.

Both secondary and elementary preservice teachers viewed a good teacher primarily "in terms of positive interpersonal relationships" (p. 58). Nevertheless, secondary majors did stress the importance of subject matter knowledge. Although all respondents saw giving clear explanations as important, an emphasis on understanding course content and learning strategies was absent. Weinstein suggested that preservice teachers' optimism can serve to undermine subject matter and pedagogy, and cause "reality shock."

Book and Freeman (1986) too, found differences in the confidence and focus of candidates. They examined differences between 174 elementary and 178 secondary teacher candidates during the first week of an introductory education course. The students completed a 6-section questionnaire consisting of 210 questions. The researchers found that elementary majors reasons for teaching were more child-centered while secondary majors were more subject matter oriented. Similarly, the quality seen by elementary majors as most important for being an outstanding teacher focused on social dynamics while secondary majors focused on subject matter.

Both groups of students had strong service orientations, elementary majors were the strongest, however. In terms of the knowledge base of education course work, elementary majors valued it more than did secondary majors. Secondary majors looked more to their own K-12 experiences "as important sources of professional knowledge" (p. 49). Both groups saw content area course work and experience in schools as part of the teacher education program as

extremely important sources of professional knowledge. Finally, of the two groups, secondary majors indicated more confidence in their teaching abilities.

West (1986) examined these same characteristics using a later sample at the same institution. The analysis focused on 188 elementary education majors and 170 secondary education majors. In comparing the two groups' motivations for teaching, the researcher found that elementary majors were more child-centered while secondary majors felt they could apply their subject matter knowledge. The results suggested, nevertheless, that both groups had "a strong 'service motive'" (p. 26). Further, both wanted to be remembered as facilitating achievement, increasing self-esteem, being enthusiastic, and exhibiting caring.

The sources of professional knowledge rated as crucial by both groups included content area courses, reading methods courses, on-the-job teaching experience, and the in-school experiences as part of their programs. Finally, secondary majors were more confident "across all 12 areas of teaching" within the questionnaire (p. 28).

In Avery and Walker's (1993) study mentioned previously, elementary and secondary education majors' responses differed in several respects. Students in secondary education credited society as contributing to both ethnic and gender disparities in achievement more often than did students in elementary education. Majors in secondary education also cited schools as contributing to ethnic disparity more than did majors in elementary education. Further, secondary education majors gave more complex answers than did elementary education majors concerning disparities in gender and ethnic achievement.

Gender Contrasts

Few recent published studies have examined the gender differences of teacher

candidates. In West's (1986) analysis referred to earlier of entering teacher education students, more males than females indicated high to complete confidence in their abilities to teach (35% vs. 20%). In terms of deliberately encouraging girls to succeed in mathematics and science, a larger percentage of females than males (49% vs. 31%) felt that teachers should do so. More females than males agreed that instruction must be relevant for daily living (44% vs. 28%). Finally, a higher proportion of females than males agreed that students should have influence in planning (40% vs. 22%).

When asked about teaching various subjects, the confidence of male and female elementary education majors also differed. More males than females (30% vs. 15%) saw science as the subject they would teach most successfully. Reading, in contrast, was seen by more females than males (24% vs. 7%) as the subject they would teach most successfully. Males (26.1%) saw social studies, language arts, and science as the subjects they would teach least successfully. Females viewed science (30.2%) and mathematics (32.3%) as the subjects they would teach least successfully.

Traditional and Nontraditional Contrasts

Published studies of the differences in the conceptions of traditional and nontraditional students are also sparse. Powell (1992) looked at how the differences in experience of traditional and nontraditional students influenced pedagogical development. He collected data at the beginning of a general methods course from 17 traditional and 25 nontraditional students. All teacher candidates had completed a course in educational psychology and an introductory, secondary education course. Powell divided transcript analysis into categories that included concept maps, stimulated recall interviews, and autobiographies.

The data suggested that differing kinds of experiences influenced nontraditional versus traditional students. Experiences with work and their children influenced nontraditional students more, while K-12 experiences and watching college instructors influenced traditional teacher candidates more. Although previous education course work influenced both groups, differences in experience surfaced in interesting ways. Nontraditional students mentioned the knowledge base of teaching and learning from their course work more often than did traditional students. Traditional students seemed to have definite ideas about what students should do.

Summary

Within this synthesis of research, I grouped studies of preservice teachers' conceptions according to five themes. These themes include: (a) general orientations to teaching and education, (b) perspectives regarding diversity and multicultural education, (c) elementary and secondary contrasts, (d) gender contrasts, and (e) traditional and nontraditional contrasts.

Among studies of preservice teachers' general orientations to teaching and learning, several conceptions surface. These conceptions include: (a) optimism that they need not know more about teaching to be successful, (b) teaching as a matter of transmission, (c) experience in the classroom as a valuable source of professional knowledge, and (d) a strong public service orientation. Studies that investigate preservice teachers' conceptions of multicultural education suggest that teacher candidates do not know very much about teaching diverse groups of students.

Elementary and secondary teaching majors' conceptions exhibit some similarities and some differences. Similarities include: (a) unrealistic optimism regarding teaching abilities,

(b) a focus on interpersonal relationships, (c) a strong service orientation, and (d) highly valuing classroom experience and content area course work. A conception associated more with elementary education majors includes being child-centered. Those associated more with secondary education majors include being oriented toward subject matter, possessing more confidence, and attributing a wider variety of factors to account for ethnic and gender disparity in achievement.

Few recent published studies have examined the gender differences of teacher candidates. In the one reviewed, males tended to be more confident in their teaching abilities. Females were more inclined to believe that instruction must be relevant for daily living, and that students should have a voice in planning. In addition, more females than males felt that it is important to encourage girls to do well in mathematics and science. Further, male and female elementary education majors differ in terms of their confidence for teaching various subjects.

In the published study that compared traditional and nontraditional students, nontraditional students mentioned the knowledge base of teaching and learning from their course work more often than did traditional students. Traditional students seemed to have definite ideas about what students should do.

Although a few conceptions surface within the above five categories, teacher educators must exert caution in generalizing them to all teacher candidates. Within some studies preservice teachers' conceptions of teaching and learning vary considerably.

Implications for Teacher Educators

Within these studies, researchers suggest a number of implications, some of which

conflict (For a summary of studies, see Table 4). For example, some researchers (Weinstein, 1988; Mahlios et al., 1995; Schmidt et al., 1990) recommend that teacher educators challenge and provide candidates with feedback about their beliefs. So that dysfunctional views are directly confronted, candidates are furnished with experiences that are in opposition to their beliefs. They are then encouraged to make comparisons between their beliefs and program views.

Other researchers (Holt-Reynolds, 1992; Harrington et al., 1995) suggest that teacher educators redirect candidates' beliefs rather than directly challenge them. From this perspective, an extended conversation would range over a number of courses and experiences. Although the means differ, the aim of those who advocate either of these two positions is essentially the same. The aim is to help preservice teachers construct an organized and detailed understanding of research based practices that promote the greatest amount of learning most of the time.

Still, various socialization and life history researchers posit that preservice teachers' conceptions of teaching and learning are so deeply ingrained that teacher educators cannot alter them. Influenced by phenomenology, many of these teacher educators direct most of their attention toward helping preservice teachers become aware of their own beliefs and the influences that have helped to shape them.

As one might imagine, teacher education looks quite different from each of these three perspectives. In a study conducted by Holt-Reynolds (1992), for instance, candidates believed that lecture enables active learning if it is interesting. From the perspective in which students' beliefs are directly challenged, teacher educators would provide candidates with experiences

that conflict with their conceptions of active learning. An instructor might begin by having candidates describe differences between instruction that is active and passive. The instructor could then teach candidates a topic with which they have had limited exposure using lecture. Likewise, the instructor could teach a correspondingly unfamiliar topic using a constructivist approach. Following both kinds of instruction, candidates could be given problem solving tasks to assess their knowledge of the topics. Further, as a class, candidates could analyze the ways in which the two approaches differed, and how the approaches affected their ability to solve problems. Based on this analysis, candidates could then be asked to reexamine and modify their initial descriptions of what makes instruction active or passive.

In contrast to an approach that confronts candidates' beliefs, teacher educators who view their work as one of redirection would not dismiss the notion of interest but would simply work to change the emphasis preservice teachers place on it over time. The emphasis would shift toward planning learning activities that facilitate engagement in higher cognitive tasks. The reason for this shift is that with a focus on engagement rather than interest, students are much more likely to process course content because they are active. Nevertheless, students often do find the subject matter interesting when they are engaged.

Compared with preceding approaches, the scenario from the Holt-Reynolds study would look quite different from the perspective of phenomenology. A teacher educator with this view would endeavor to help preservice teachers understand their own beliefs, and would not focus on changing their emphasis on interest. Learning to teach would be viewed as a personal endeavor that is closeup, something teacher candidates do that is deeply personal (Carter & Doyle, 1996). Each candidate, therefore, would be encouraged to examine the

source of this belief, and to find his or her own best way in a supportive environment (Zeichner, 1983).

In order for teacher educators to develop effective interventions to address teacher candidates' conceptions of teaching and learning, studies are needed that investigate what candidates attend to and learn when various kinds of instruction are used to teach course content. In other words, what meaning do teacher candidates make of subject matter when it is represented using various means, and how does that affect what they learn? Furthermore, are some instructional interventions better at the beginning or end of candidates' programs based on their stage of teacher development? Answers to these questions will help to solve some of the most pressing debates within teacher education.

Table 1.

Teacher Candidates' General Orientations to Teaching and Education

Study	Sample Size	Data Sources	Conceptions
Book, Byer, & Freeman, 1983	N=473	Questionnaire	Highly confident; expected to learn little; classroom experience valued; focused on students' self-concepts
Gurney, 1995	N=113	Questionnaire - allowed for metaphor construction	Variability in teacher candidates' beliefs
Mahlios, Marc, & Maxson, 1995	N=134	6-part questionnaire - allowed for metaphor construction	Planned to teach didactically; schools should be nurturant; children should be obedient; affective traits emphasized; development is genetic
Schmidt & Kennedy, 1990	n=476, writing; n=481, math; n=471, teaching responsibilities	Questionnaire (7-point Likert scale)	Wide diversity of beliefs that included both function and process
Weinstein, 1988	N=118	33-item questionnaire	Unrealistic optimism
West, 1986	N=545	Questionnaire	Highly confident; classroom experience valued; oriented toward helping children

Table 2.

Perspectives on Diversity and Multicultural Education

Study	Sample Size	Data Sources	Conceptions
Avery & Walker, 1993	N=152	Responded to 2 questions in writing	Limited awareness of inequity, i.e., simplistic responses; ethnic disparity in achievement tied to culture; gender disparity in achievement tied to societal attitudes; school seen as creating disparity for gender more than for ethnicity
Barry & Lechner, 1995	N=73	3-part questionnaire	Limited knowledge of research findings; doubted abilities; desired more knowledge
Harrington & Hathaway, 1995	N=27	Structured computer conferencing activity	Varied beliefs, i.e., multiple view points important; doubted abilities; saw instructional implications; confusion about issues/ actions/implications

(continued)

Table 2. (Continued)

Perspectives on Diversity and Multicultural Education

Study	Sample Size	Data Sources	Conceptions
Goodwin, 1994	N=80	Open-ended questionnaire	Varied beliefs ranging from superficial to meaningful; reactive educatien dependent on context
Lindblad & Prieto, 1992	N=1029; n=671	Survey (subsample)	The 34 teachers were middle class, traditional, patriarchal; did not relate with working class perspectives of resistance
McCall, 1995	N=2	Class session audiotapes, researcher's journal, students' journals, responses to analysis	Limited awareness of inequity
Ross, 1992	N=6	Research paper, 3 reaction papers, personal theory paper, journal entries, observations, interviews	Limited knowledge of research findings; doubted abilities; cultural deficits due to homes; recognized complexity; interventions tied to attitudes not actions; experience in homogeneous setting desired

Table 3.

Elementary and Secondary Contrasts

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
Avery & Walker, 1993	n=99, elementary; n=53 secondary	Responded to 2 questions in writing	Less aware than secondary of sources of ethnic/gender disparity in achievement; less complex answers	More aware than elementary of sources of ethnic/gender disparity in achievement; more complex answers
Book, Freeman, 1986	n=174, elementary; n=178, secondary	6-section questionnaire with 210 questions	Child-centered; focus on social dynamics; service orientation; value knowledge base more than secondary; content area courses & experiences in schools valued	Subject matter and service oriented; K-12 experiences valued; content area courses/ experiences in schools valued; more confident than elementary

(continued)

Table 3. (Continued)

Elementary and Secondary Contrasts (Continued)

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
Weinstein, 1989	n=81, elementary/ early childhood; n=32 secondary	Open-ended and fixed-response questionnaire	Unrealistic optimism; self-ratings high on relationships and low on instruction; good teachers viewed in terms of relationships; enjoy children; no focus on learning strategies & understanding	Unrealistic optimism; self-ratings equal for management, relationships, and instruction; good teachers viewed in terms of relation-ships and subject matter knowledge; confident; no focus on learning strategies and understanding (continued)

Table 3. (Continued)

Elementary and Secondary Contrasts (Continued)

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
West, 1986	n=188, elementary; n=170 secondary	Questionnaire	Child-centered; service motive; want to be remembered for increasing achievement and self-esteem, enthusiasm and caring; experience in schools valued	View teaching as a means to apply subject knowledge; service motive; want to be remembered for increasing achievement and self-esteem, enthusiasm and caring; experience in schools valued; more confident than elementary

Table 4.

Implications for Teacher Education

Study	Implications
Avery & Walker, 1993	Address impact of race, social class, gender on learning; make connections between social structures, schooling, and the complex interaction of variables
Barry & Lechner, 1995	Integrate multicultural education throughout program; emphasize cooperation not competition; use authentic evaluation and hands-on experience
Book, Byer & Freeman, 1983	Emphasize the structure of subject matter disciplines to prevent students from focusing on self-concept; teach students to organize/teach content for student learning, and use evaluation as a means to strengthen student learning; stress value of professional preparation and help candidates see what they do not know
Book & Freeman, 1986	Provide early field experiences for secondary majors; require more science/math for elementary majors with limited secondary course work; be sensitive to differences in the child-centered vs. subject matter focus of elementary and secondary majors; attend to candidates' levels of commitment
Goodwin, 1994	Integrate powerful experiences/dialogue; better assess student teaching sites; help candidates view multicultural education as a guide for decision making with all student populations
Gurney, 1995	None

(continued)

Table 4. (Continued)

Implications for Teacher Education

Study	Implications
Harrington & Hathaway, 1995	Redirect rather than wipe out candidates' beliefs; conversations must extend over several courses and experiences
Lindbald & Prieto, 1992	Use a biographical approach so that candidates "reflect upon their own particular experiences of schooling". Help candidates "recognize the impact of different experiences and rationalities among their students" (p. 469).
Mahlios, Marc & Maxson, 1995	Assess candidates' conceptions/provide them with feedback about their conceptions; make explicit how candidates' conceptions compare/contrast with program views; use conceptions as spring board; directly challenge dysfunctional viewsMcCall, 1995Use learning experiences facilitate candidates' awareness of own experiences influencing race, gender, class; have candidates explain conceptions/express concerns
Powell, 1992	Help nontraditional candidates refine existing strategies and identify those that are inappropriate; help traditional candidates critically evaluate instructional practices of former secondary teachers
Ross, 1992	Intervention of supervisor essential during student teaching; help students to see specific actions associated with equity

(continued)

Table 4. (Continued)

Implications for Teacher Education

Study	Implications
Schmidt & Kennedy, 1990	Candidates need not form beliefs, but alter existing ones; challenge candidates' beliefs; focus on depth rather than breath so candidates will do the same
Weinstein, 1989	Have candidates articulate beliefs; provide them with alternative conceptions; temper unrealistic optimism with more realistic expectations; have well-defined themes to help students organize their knowledge; be aware of students' conceptions
Weinstein, 1988	Increase program length/rigor; emphasize diagnosis/remediation upon failure in methods courses; advocate cohort experiences and encourage comparisons of background experiences so students see that they are like their peers
West, 1986	Same as Book & Freeman, 1986

References

Artiles, A. J., Mostert, M. P., Tankersley, M. (1994). Assessing the link between teacher cognitions, teacher behaviors, and pupil responses to lessons. Teaching and Teacher Education, 10(5), 465-481.

Ausubel, D. P. (1968). Educational psychology: A cognitive view. New York, NY: Holt, Rinehart and Winston, Inc.

Avery, P. G. & Walker, C. (1993). Prospective teachers' perceptions of ethnic and gender differences in academic achievement. Journal of Teacher Education, 44(1), 27-37.

Barry, N. H., & Lechner, J. V. (1995). Preservice teachers' attitudes about and awareness of multicultural teaching and learning. Teaching and Teacher Education, 11(2), 149-161.

Book, C. L., & Freeman, D. J. (1986). Differences in entry characteristics of elementary and secondary teacher candidates. Journal of Teacher Education, 37(2), 47-51.

Brousseau, B., & Freeman, D. (1984). Entering teacher candidate interviews, Fall, 1982. (Pro. Eval. Series No. 5). East Lansing: Michigan State University, The Office of Program Evaluation, College of Education.

Bullough, R. V., Jr. (Draft, July, 1995). Becoming a teacher: Self and the social location of teacher education. The International Handbook of Teachers and Teaching.

Calderhead, J. (Ed.). (1987). Exploring teachers' thinking. London, England: Cassell Educational Limited.

Calderhead, J. (Ed.). (1988). Teachers' Professional Learning. Philadelphia, PA: The Falmer Press.

Calderhead, J., & Robson, M. (1991). Images of teaching: Student teachers' early conceptions of classroom practice. Teaching and Teacher Education, 7, 1-8.

Carter, K., & Doyle, W. (1996). Personal narrative and life history in learning to teach. In J. Sikula, T. J. Buttery, & E. Guyton, (Eds.), Handbook of research on teacher education. New York: Macmillan Library Reference USA.

Clift, R. (1987). English teacher or English major: Epistemological differences in the teaching of English. English Education, 19, 229-236.

Derry, S. J. (1996). Cognitive schema theory in the constructivist debate. Educational Psychologist, 31, 163-74.

Eggen, P., Kauchak, D., Winitzky, N., Jensen, J., & Hadden, J. (1997, April). An exploratory study of conceptual change in an introductory educational psychology course. Paper presented at the American Education Research Association, Chicago, IL.

Fosnot, C. T. (Ed.). (1996). Constructivism: Theory, perspectives, and practice. New York: Teachers College Press.

Gelman, R. (1996). Constructivism and supporting environments. In D. Tirosh (Ed.), Implicit and explicit knowledge: An educational approach (pp. 55-82). Norwood, NJ: Ablex Publishing Corporation.

Goodwin, A. L. (1994). Making the transition from self to others: What do preservice teachers really think about multicultural education? Journal of Teacher Education, 45(2), 119-131.

Grossman, P. (1990). The making of a teacher: Teacher knowledge and teacher education. New York, NY: Teachers College Press.

Grossman, P., & Richert, A. (1988). Unacknowledged knowledge growth: A re-examination of the effects of teacher education. Teaching and Teacher Education, 4(1), 53-62.

Gurney, B. F. (1995). Tugboats and tennis games: Preservice conceptions of teaching and learning revealed through metaphors. Journal of Research in Science Teaching, 32(6),

569-583.

Harrington, H. L., & Hathaway, R. S. (1995). Illuminating beliefs about diversity. Journal of Teacher Education, 46(4), 275-284.

Hollingsworth, S. (1989). Prior beliefs and cognitive change in learning to teach. American Educational Research Journal, 26(2), 160-189.

Holt-Reynolds, D. (1991). Personal history-based beliefs as relevant prior knowledge in course work. American Educational Research Journal, 29(2), 325-349.

Mahlios, M., & Maxson, M. (1995). Capturing preservice teachers' beliefs about schooling, life, and childhood. Journal of Teacher Education, 46(3), 192-199.

McCall, A. L. (1995). Constructing conceptions of multicultural teaching: Preservice teachers' life experiences and teacher education. Journal of Teacher Education, 46(5), 340-351.

Murray, F. B. (Ed.). (1996). The teacher educator's handbook: Building a knowledge base for the preparation of teachers. San Francisco: Jossey-Bass.

Powell, R. R. (1992). The influence of prior experiences on pedagogical constructs of traditional and nontraditional preservice teachers. Teaching and Teacher Education, 8(3), 225-238.

Resnick, L. (1989). Introduction. In L. Resnick (Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 1-24). Hillsdale, NJ: Lawrence Erlbaum Associates.

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.), Handbook of Research on Teacher Education (pp. 102-119). New York, NY: Macmillan Library Reference USA.

Ross, D. D., & Smith W. (1992). Understanding preservice teachers' perspectives on

diversity. Journal of Teacher Education,43(2), 94-103.

Schmidt, W. H., & Kennedy, M. M. (1990). Teachers and teacher candidates' beliefs about subject matter and about teaching responsibilities (Report No. NCRTL-RR-90-4). East Lansing, MI: National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 320 902)

Sikula, J., Buttery, T. J., & Guyton, E. (Eds.). (1996). Handbook of research on teacher education: A project of the Association of Teacher Educators (2nd ed.). New York, NY: Macmillan Library Reference USA.

Weinstein, C. S. (1988). Preservice teachers' expectations about the first year of teaching. Teaching and Teacher Education, 4(1), 31-40.

Weinstein, C. S. (1989). Teacher education students' preconceptions of teaching. Journal of Teacher Education, 40, 53-60.

West. B. (1986). Profiles of entering Michigan State University teacher education students: 1985-1986 academic year (Pro. Eval. Series No. 12). East Lansing: Michigan State University, The Office of Program Evaluation, College of Education.

Winitzky, N., & Kauchak, D. (1997). Constructivism in teacher education: Applying cognitive theory to teacher learning. In V. Richardson (Ed.), Constructivist teacher education: Building new understandings. Washington, DC: The Falmer Press.

Zeichner, K. M. (1983). Alternative paradigms of teacher education. Journal of Teacher Education, 34(3), p. 3-9.

Teacher Candidates' Conceptions of Teaching and Learning: A Review

Jacquelyn W. Jensen

University of Utah

April 15, 1998

Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Author Note

Jacquelyn W. Jensen is a doctoral candidate in the Department of Educational Studies at the University of Utah. Her areas of interest include teacher education, teacher thinking, conceptual change, family and consumer sciences education, human development, and nutrition. Correspondence concerning this article should be addressed to the author at: 3934 West 7925 South, West Jordan, Utah 84088.

This paper was initially written as a section in the author's dissertation literature review. Nancy Winitzky's comments on earlier drafts warrant special thanks.

Abstract

Teacher educators must understand the research findings on teacher candidates' conceptions of teaching and learning to effectively influence what their students learn. The purpose of this paper, therefore, is to provide a best-evidence synthesis of studies on preservice teachers' conceptions of teaching and learning, and to describe their implications for teacher education.

Teacher Candidates' Conceptions of Teaching and Learning

Many teacher educators operate according to the assumption that teacher candidates' actions within the classroom are associated with their knowledge of teaching and learning (Artiles, Mostert, & Tankersley, 1994). Consequently, helping preservice teachers construct an organized and detailed conceptual understanding concerning the knowledge base within education is a central aim of teacher education. Because meaningful learning is influenced by what teacher candidates already know (Ausubel, 1968; Calderhead & Robson, 1991; Resnick, 1989), teacher educators must have a clear understanding of their students' background knowledge. The purpose of this paper, therefore, is to synthesize studies on preservice teachers' conceptions of teaching and learning, and to describe their implications for teacher education.

I first explain the criteria I used to select studies. A discussion of several considerations will then help to position the studies selected for inclusion. These considerations include: (a) a clarification of the terminology used in differing studies, (b) a brief overview of three sources of experience, and (c) differences in the timing of studies.

Following a discussion of the above considerations, I have grouped studies that focus on preservice teachers' conceptions according to five themes. They include: (a) general orientations to teaching and education, (b) perspectives concerning diversity and multicultural education, (c) elementary and secondary contrasts, (d) gender contrasts, and (e) traditional and nontraditional contrasts. Although some patterns emerge within each theme, teacher educators must exercise caution in generalizing these findings to all teacher candidates. Within some

studies reported here, preservice teachers' conceptions of teaching and learning vary considerably. Finally, I delineate the implications of this synthesis for teacher education.

Study Inclusion Criteria

An examination of the literature regarding preservice teachers' conceptions of teaching and learning began by reading seminal chapters within several books. These books include Handbook of research on teacher education: A project of the association of teacher educators, The teacher educator's handbook: Building a knowledge base for the preparation of teachers, Exploring teachers' thinking, Teachers' professional learning, and Constructivism: Theory, perspectives and practice. At the same time, I scrutinized the bibliographies of several relevant studies, such as, Derry (1996), Gelman (1996), Hollingsworth (1989), Holt-Reynolds (1992), Weinstein (1989), and Winitzky and Kauchak (1997) for related studies.

I then generated combinations of key words and completed a computer search of ERIC and Education Index for the years 1981 through 1996. While reading ERIC abstracts, I noted and searched additional key words. Examples of keywords used in these searches include: (a) teacher socialization, (b) preservice teacher socialization, (c) teacher growth, (d) teacher change, (e) preservice teacher change, (f) teacher beliefs, (g) preservice teacher beliefs, (h) beginning teacher learning, (i) preservice teacher learning, and (j) teacher thinking.

Following the database searches, I completed hand searches of five journals for the years 1992 through 1996. These journals included Teaching and Teacher Education, Journal of Teacher Education, American Educational Research Journal, Review of Educational Research, and Journal of Educational Psychology. Two education professors (Nancy Winitzky, Julie Gess-Newsome) at the University of Utah also suggested several studies

contained in assorted journals.

I limited the articles selected for consideration to those that specifically center on preservice teachers rather than teachers generally. Although some studies are reviewed that include a cross-section of both, the findings relative to teacher candidates are the focus. Studies presented at meetings were excluded in favor of published studies because these studies are generally subjected to more rigorous standards during peer review.

After these exclusions, I examined all articles obtained holistically to exclude studies of marginal quality. Indicators of methodological quality such as the sample size, triangulation, study duration, and instrument validity and reliability were appraised. I made a decision concerning inclusion on a study by study basis. Imagine, for example, that a study contained a small sample size and utilized only two methods of data collection. Its prospect of being included increased if it extended over more than one semester or quarter, and utilized an instrument(s) in which validity had been firmly established. Finally, discussion occurred with an expert on teacher thinking to critique and come to consensus regarding the methodological quality of several studies.

Research conducted by Brousseau and Freeman (1984) is an example of a study that I excluded from this review. The purpose of the study was to investigate the perceptions that preservice teachers have about "their role as teachers" (p. 1). Five to six teacher candidates for each of five programs participated in the study upon entrance into the programs. Researchers used an interview to collect the data.

I excluded the study because (a) reliability checks for assigning responses to categories were absent, (b) the authors suspected that differences in the personalities of the seven

interviewers influenced the responses, (c) the time of the interviews during the methods course was not held constant, (d) the sample size is small, (e) researchers did not employ means to triangulate the data, and (f) this synthesis includes studies of higher methodological quality from the same institution that examine preservice teachers' conceptions.

Positioning the Studies

Clarification of Terminology

Because researchers use a range of words to describe preservice teachers' conceptions of teaching and learning, clarification of the terminology used within the literature is necessary. Beliefs, attitudes, and knowledge are three of these terms. For some authors, these terms have precise meanings, while others use them interchangeably. To clarify the confusion, Richardson (1996) makes some important distinctions between them.

Attitudes can be thought of as predispositions linked to affect, characterized by a favorable or unfavorable response. Beliefs, by contrast, are thought to be more cognitive in nature, and are identified with understandings and propositions. Beliefs reside in clusters, and those that are the most central are thought to be the most difficult to change.

Richardson (1996) also distinguished between beliefs and knowledge. She maintains that a belief is an idea that an individual deems true which need not be proved with evidence. Knowledge, in contrast, "implies epistemic warrant" (p. 104). Helping preservice teachers to transform beliefs into knowledge is, therefore, a goal of teacher education. Although I accept the differentiations articulated by Richardson, the terms used by the researcher(s) have been retained as each study is reviewed.

Three Sources of Experience

Teacher candidates' attitudes, beliefs and knowledge about teaching and learning are formed through various kinds of experience. Richardson (1996) describes three categories of experience examined in the learning to teach literature. These categories include "personal experience, experience with schooling and instruction, and experience with formal knowledge" (p. 105).

Many aspects of personal experience influence the way that preservice teachers approach teaching. Some of these include gender, religious affiliation, geographic region, and past decisions.

Life history and socialization researchers cite experience over many years with schooling and instruction as equipping preservice teachers with strong beliefs before they enter teacher education. According to this group of researchers, the knowledge base within teacher education has little influence on preservice teachers' actions while in the classroom. This limited influence is attributed to the combination of personal experience, spending years in classrooms as students, and student teaching.

Richardson (1996) describes experience with formal knowledge as understandings of subject matter that have consensus within the scholarly community. The formal knowledge that specifically influences preservice teachers includes knowledge of subject matter, how students learn it, and pedagogical knowledge. Studies show that preservice teachers' understanding of subject matter affects the way that they plan. Those teacher candidates who have a coherent conceptual understanding of subject matter plan differently from those without such an understanding.

Pedagogical knowledge, that is, knowledge of teaching practices such as "classroom

management, models of teaching, and classroom environment," is often taught to students before their student teaching experience (p. 106). Many life history and socialization researchers maintain that pedagogical knowledge has the least influence on practice while others (Clift, 1987; Grossman, 1990; Grossman & Richert, 1988) cite considerable variation in the actions of those who have and have not received such instruction.

Differences in Timing

Preservice teachers' experience with formal knowledge differs substantially across studies because of the timing of studies during teacher education programs. Some studies depict most students enrolled in their first education course. Others report that students have taken a few education courses. Assorted studies describe students' conceptions at the end of their program. Just as the point at which a study is conducted will influence its findings, so must the differences in program structure. For example, some programs integrate field experience throughout course work while others position it largely at the end. Unfortunately, studies of preservice teachers' conceptions give few details concerning program structure.

Preservice Teachers' Conceptions

General Orientations to Teaching and Education

Although preservice teachers' conceptions of teaching and education are diverse, several themes surface. These themes include: (a) a feeling of optimism or confidence that preservice teachers need not know more about teaching to be successful, (b) teaching as a matter of transmitting important facts for learners to memorize, (c) experience in the classroom as a valuable source of professional knowledge, and (d) a public service orientation toward helping children (For a summary of each study, see Table 1).

Weinstein (1988) explored 118 elementary education majors' expectations about their first year of teaching. Participants' had completed all formal course work and were about to begin student teaching. Forty-two students indicated some form of prior teaching experience. All completed a 33-item questionnaire based on frequent problems of beginning teachers at a student teacher orientation session.

The study showed that teacher candidates believed tasks would be much easier for themselves than for their peers. They were very optimistic about tasks with which beginning teachers have the greatest difficulty, i.e., organization and management. Preservice teachers who had some form of prior teaching experience were even more optimistic. Weinstein concluded that teacher candidates' unrealistic optimism contributes to reality shock, and may lead them to see no need to "seriously engage in teacher preparation" (p. 39).

Book, Byers, and Freeman (1983) also found preservice teachers to be highly confident in their teaching abilities. Participants included 473 preservice teachers enrolled in two introductory education courses. Data collection occurred using a questionnaire that dealt with preservice teachers "pre-college and college experiences, career aspirations, perceptions of the role of the teacher and demographic characteristics" (p. 9).

The study suggested that teacher candidates were so confident in their abilities that they did not expect to learn very much about teaching. The most vital sources of professional knowledge for candidates included on-the-job training and supervised teaching experiences. Candidates listed instructional methods and content area courses next in importance. They viewed educational psychology and foundations courses as the least worthwhile.

Further, participants saw enhancing self-concept as more important than either

promoting academic achievement or creating an environment where a diverse student population could work and learn together. They did not view achievement as a way to increase students' self-concepts. Book et al. (1983) note the "perceived lack of importance of maximizing student achievement by preservice teachers, coupled with their confidence in their ability to teach and their devaluing of pedagogy courses, is perhaps the most significant finding of this study" (p. 12).

Three years later, another study conducted at Michigan State University similarly revealed that entering preservice teachers were confident in their current abilities to teach. The study sought to describe teacher candidates in five teacher education programs. Data collection occurred at the beginning and end of students' programs, and included both short term and long term follow-ups. West (1986) reported the entry questionnaire data from 545 preservice teachers.

Although West reports teachers' orientations and beliefs about many aspects of teaching, three are consistent with other studies. Eighty-five percent of teacher candidates reported being confident "in their ability to succeed now as a teacher" (p. 20). Although approximately 50% of the respondents rated all sources of professional knowledge as crucial for teaching, over 80% of the respondents rated classroom experience as crucial. Finally, candidates cited an orientation toward helping children as an important motivation for selecting teaching as a career.

In contrast to West (1986), Mahlios, Marc and Maxson (1995) reported that teacher candidates view teaching as a matter of transmitting important facts for learners to memorize. They explored 134 students' root beliefs about school, life and childhood. Students enrolled in

an initial course for elementary education majors answered a 6-part questionnaire. The questionnaire was more structured on some parts than others, and allowed for the construction of metaphors.

Mahlios et al. (1995) found that although teacher candidates enjoyed learning in groups, they planned to teach didactically. Similarly, their belief that school should be a nurturant place conflicts with their belief that children should be submissive, compliant, and happy. Only 21 of the students saw the ideal teacher as having an academic focus besides affective traits. Finally, they believed that development is genetic, a conception that could conflict with programs that emphasize the social construction of knowledge.

Despite the findings just described, a study conducted by Schmidt and Kennedy (1990) illustrates the need for caution in trying to generalize specific conceptions to all teacher candidates. As part of a longitudinal study of Teacher Education and Learning to Teach (TELT), these researchers examined teacher candidates' beliefs about subject matter and teaching responsibilities. Students completed a questionnaire before participation in teacher education (n=476, writing; n=481, mathematics; n=471, teaching responsibilities). Participants indicated agreement or disagreement along a 7-point scale with statements representing dichotomies between function and process. The researchers noted that "probably the most remarkable finding from this study is the wide diversity of beliefs held by . . . teacher candidates" about the nature of writing, mathematics, and teaching responsibilities (p. 8). The belief patterns that did stand out included "both poles of the education dichotomy" (p. 9).

Likewise, Gurney (1995) also reported variability in preservice science teachers'

conceptions of teaching and learning. Participants completed a questionnaire that allowed for the construction of metaphors on the first day of a methods course. One hundred thirty students responded, and metaphors from 113 participants were considered usable.

Mood was one of the ways that the researcher classified the metaphors, and it included three dimensions. They are: (a) effort, either active or passive involvement of the teacher and learner (b) affect, either positive, negative or neutral, and (c) control, either teacher-centered, student-centered, shared, or unspecific. The effort within the majority of metaphors was active (86.7%) rather than passive (13.3%). In terms of affect, the largest number of metaphors were neutral (49.6%), followed by positive (37.2%), and negative (13.3%). Teacher-centered control (48.7%) was the most evident form of control, followed by shared control (23.9%), unspecified control (15.9%), and student-centered control (11.5%).

Perspectives on Diversity and Multicultural Education

Besides examining teacher candidates' general orientations to teaching and learning, several studies also explore their perspectives on diversity and multicultural education. Within these studies, conceptions vary widely within groups of preservice teachers. The most noticeable pattern is that candidates do not know very much about teaching diverse groups of students. In most studies, the researchers indicate that the theme of teaching diverse groups of learners is not integrated across courses within teacher education programs (For a summary of each study, see Table 2).

Harrington and Hathaway (1995) examined 27 preservice teachers' beliefs about multicultural education and their responsibility for implementation. They analyzed the discussion that occurred over a period of 1 month during a structured computer conferencing

activity. The data suggested that teacher candidates' beliefs about multicultural education, their role, and inherent difficulties in dealing with diversity varied dramatically. Many saw presenting multiple points of view as important while others doubted their ability to do so because of lack of knowledge and time. Although some saw implications for pedagogy and teaching students to think critically, there was some confusion about what multicultural education is and the pedagogical implications. Many did not connect issues, actions, and larger implications.

Similarly, Goodwin (1994) reported variability in preservice teachers' conceptions of multicultural education. This researcher investigated eighty preservice teachers' perceptions concerning multicultural education near completion of the program. Analysis of the data provided on an open-ended questionnaire suggested that teacher candidates exhibited extreme variability in their perceptions about the aims and goals of multicultural education. Their perceptions ranged from superficial to meaningful. The concerns they had about multicultural education suggested that it was seen as reactive education dependent on the context rather than as a perspective that guides decisions.

A limited knowledge of research findings on multicultural education, and doubt in their abilities to teach diverse student populations also surfaces in the literature. For instance, Ross (1992) examined six teacher candidates perspectives on diversity during a course entitled Research in Elementary Education, a field placement seminar. Participants still had 2 years of course work following this class. A research paper, three reaction papers, a personal theory paper, journal entries, observations, and interviews provided data for the study.

Ross found that two participants opposed teaching diverse learners, and believed they

had cultural deficits because of their home environments. Three participants recognized the complexity of diversity but tied interventions to the teacher's attitude rather than specific actions. One participant had a clear idea of pedagogy but felt that he needed to teach a more homogeneous group of students to automatize some aspects of teaching before moving to a diverse setting.

Barry and Lechner (1995) too found that teacher candidates lack knowledge and express little confidence regarding the implementation of multicultural education. In an elementary methods course, they examined 73 preservice teachers' attitudes and awareness of multicultural education using a 3-part questionnaire. Students enrolled in the course had taken two to three education courses before the study. The analysis showed that although preservice teachers were aware of the issues addressed by multicultural education, they knew little about the findings of research on teaching diverse students. They expressed doubt in their abilities to implement multicultural education effectively and wanted to know more.

Not only do studies suggest a lack of knowledge about interventions, they also suggest limited awareness of inequity. From a study of 21 preservice teachers', McCall (1995) described two students' conceptions of multicultural teaching to better understand how their life experiences influenced learning. McCall analyzed class session audiotapes, her own journal entries written after listening to each audiotape, student journals, student interviews, and student responses to her analysis. She found that the two preservice teachers at the beginning of the course had little awareness of how content and teaching materials inequitably portray diverse groups. These candidates were unaware that the content advanced a white, male perspective, and that it did not represent many groups.

A study by Avery and Walker (1993) also suggests that many candidates have limited awareness of inequity. In a study with 152 preservice teachers just entering the college of education, these researchers examined their perceptions of ethnic and gender differences in academic achievement. Over a period of 40 minutes, participants responded in writing to two questions. The analysis examined teacher candidates' explanations of the disparity, and the quality of their explanations.

On a 4-point scale ranging from simple (1) to complex (4), the quality of 80% of the responses was coded as a 1 or 2. Preservice teachers were more sympathetic in terms of gender than they were of ethnic differences. Generally, teacher candidates associated ethnic disparity in academic achievement with group values or ethnic culture, whereas they identified societal attitudes as the basis of disparity for gender. In addition, 75% of respondents viewed schools as adding to gender disparity. Only 56% of respondents saw schools as contributing to the problem of ethnic inequity.

Finally, in a longitudinal study of pupils who grew up to be teachers, Lindblad and Prieto (1992) examined the experiences of people who chose teaching compared with those who chose other occupations. They focused attention on the social position and the perspectives on schooling of 1029 participants. In the 1970's, pupils were studied when in grades one through nine, and then in the 1980's the researchers surveyed 671 participants from the earlier sample in terms of their careers and social class.

Lindblad and Prieto found that the 34 participants who became teachers were over achievers when comparing their grades and test scores with those of others in the sample. Their perspectives can be characterized as being middle class, traditional, and patriarchal.

They did not relate with working class perspectives of resistance.

Elementary and Secondary Contrasts

Studies that have examined differences between elementary and secondary teaching majors report both similarities and differences. The similarities that surface include: (a) unrealistic optimism regarding teaching abilities, (b) a focus on interpersonal relationships at the expense of understanding subject matter and acquiring learning strategies, (c) a strong service orientation, and (d) highly valuing classroom experience and content area course work as important sources of professional knowledge. One conception associated more with elementary education majors includes being child-centered. Conceptions associated more with secondary education majors include being oriented toward subject matter, and possessing more confidence. In addition, secondary education majors tend to attribute a wider variety of factors to account for ethnic and gender disparity in academic achievement than do elementary education majors (For a summary of studies, see Table 3).

Weinstein (1989) investigated 113 students' conceptions in an introductory level education course on the first day of class. Students responded to a questionnaire consisting of both open-ended and fixed-response questions. The principal finding among both elementary and secondary majors was "'unrealistic optimism' - the tendency to believe that the problems that plague others won't happen to them" (p. 57).

The self-ratings of elementary education majors were highest on interpersonal relationships and lowest on instructional responsibilities. Secondary education majors had equal ratings across all three domains (i.e., organization and management, interpersonal relationships, instruction). In explaining the self-ratings, candidates approached working with

children with excitement and saw it as enjoyable. This excitement was expressed to a greater degree by elementary education majors, whereas secondary education majors expressed more confidence.

Both secondary and elementary preservice teachers viewed a good teacher primarily "in terms of positive interpersonal relationships" (p. 58). Nevertheless, secondary majors did stress the importance of subject matter knowledge. Although all respondents saw giving clear explanations as important, an emphasis on understanding course content and learning strategies was absent. Weinstein suggested that preservice teachers' optimism can serve to undermine subject matter and pedagogy, and cause "reality shock."

Book and Freeman (1986) too, found differences in the confidence and focus of candidates. They examined differences between 174 elementary and 178 secondary teacher candidates during the first week of an introductory education course. The students completed a 6-section questionnaire consisting of 210 questions. The researchers found that elementary majors reasons for teaching were more child-centered while secondary majors were more subject matter oriented. Similarly, the quality seen by elementary majors as most important for being an outstanding teacher focused on social dynamics while secondary majors focused on subject matter.

Both groups of students had strong service orientations, elementary majors were the strongest, however. In terms of the knowledge base of education course work, elementary majors valued it more than did secondary majors. Secondary majors looked more to their own K-12 experiences "as important sources of professional knowledge" (p. 49). Both groups saw content area course work and experience in schools as part of the teacher education program as

extremely important sources of professional knowledge. Finally, of the two groups, secondary majors indicated more confidence in their teaching abilities.

West (1986) examined these same characteristics using a later sample at the same institution. The analysis focused on 188 elementary education majors and 170 secondary education majors. In comparing the two groups' motivations for teaching, the researcher found that elementary majors were more child-centered while secondary majors felt they could apply their subject matter knowledge. The results suggested, nevertheless, that both groups had "a strong 'service motive'" (p. 26). Further, both wanted to be remembered as facilitating achievement, increasing self-esteem, being enthusiastic, and exhibiting caring.

The sources of professional knowledge rated as crucial by both groups included content area courses, reading methods courses, on-the-job teaching experience, and the in-school experiences as part of their programs. Finally, secondary majors were more confident "across all 12 areas of teaching" within the questionnaire (p. 28).

In Avery and Walker's (1993) study mentioned previously, elementary and secondary education majors' responses differed in several respects. Students in secondary education credited society as contributing to both ethnic and gender disparities in achievement more often than did students in elementary education. Majors in secondary education also cited schools as contributing to ethnic disparity more than did majors in elementary education. Further, secondary education majors gave more complex answers than did elementary education majors concerning disparities in gender and ethnic achievement.

Gender Contrasts

Few recent published studies have examined the gender differences of teacher

candidates. In West's (1986) analysis referred to earlier of entering teacher education students, more males than females indicated high to complete confidence in their abilities to teach (35% vs. 20%). In terms of deliberately encouraging girls to succeed in mathematics and science, a larger percentage of females than males (49% vs. 31%) felt that teachers should do so. More females than males agreed that instruction must be relevant for daily living (44% vs. 28%). Finally, a higher proportion of females than males agreed that students should have influence in planning (40% vs. 22%).

When asked about teaching various subjects, the confidence of male and female elementary education majors also differed. More males than females (30% vs. 15%) saw science as the subject they would teach most successfully. Reading, in contrast, was seen by more females than males (24% vs. 7%) as the subject they would teach most successfully. Males (26.1%) saw social studies, language arts, and science as the subjects they would teach least successfully. Females viewed science (30.2%) and mathematics (32.3%) as the subjects they would teach least successfully.

Traditional and Nontraditional Contrasts

Published studies of the differences in the conceptions of traditional and nontraditional students are also sparse. Powell (1992) looked at how the differences in experience of traditional and nontraditional students influenced pedagogical development. He collected data at the beginning of a general methods course from 17 traditional and 25 nontraditional students. All teacher candidates had completed a course in educational psychology and an introductory, secondary education course. Powell divided transcript analysis into categories that included concept maps, stimulated recall interviews, and autobiographies.

The data suggested that differing kinds of experiences influenced nontraditional versus traditional students. Experiences with work and their children influenced nontraditional students more, while K-12 experiences and watching college instructors influenced traditional teacher candidates more. Although previous education course work influenced both groups, differences in experience surfaced in interesting ways. Nontraditional students mentioned the knowledge base of teaching and learning from their course work more often than did traditional students. Traditional students seemed to have definite ideas about what students should do.

Summary

Within this synthesis of research, I grouped studies of preservice teachers' conceptions according to five themes. These themes include: (a) general orientations to teaching and education, (b) perspectives regarding diversity and multicultural education, (c) elementary and secondary contrasts, (d) gender contrasts, and (e) traditional and nontraditional contrasts.

Among studies of preservice teachers' general orientations to teaching and learning, several conceptions surface. These conceptions include: (a) optimism that they need not know more about teaching to be successful, (b) teaching as a matter of transmission, (c) experience in the classroom as a valuable source of professional knowledge, and (d) a strong public service orientation. Studies that investigate preservice teachers' conceptions of multicultural education suggest that teacher candidates do not know very much about teaching diverse groups of students.

Elementary and secondary teaching majors' conceptions exhibit some similarities and some differences. Similarities include: (a) unrealistic optimism regarding teaching abilities,

(b) a focus on interpersonal relationships, (c) a strong service orientation, and (d) highly valuing classroom experience and content area course work. A conception associated more with elementary education majors includes being child-centered. Those associated more with secondary education majors include being oriented toward subject matter, possessing more confidence, and attributing a wider variety of factors to account for ethnic and gender disparity in achievement.

Few recent published studies have examined the gender differences of teacher candidates. In the one reviewed, males tended to be more confident in their teaching abilities. Females were more inclined to believe that instruction must be relevant for daily living, and that students should have a voice in planning. In addition, more females than males felt that it is important to encourage girls to do well in mathematics and science. Further, male and female elementary education majors differ in terms of their confidence for teaching various subjects.

In the published study that compared traditional and nontraditional students, nontraditional students mentioned the knowledge base of teaching and learning from their course work more often than did traditional students. Traditional students seemed to have definite ideas about what students should do.

Although a few conceptions surface within the above five categories, teacher educators must exert caution in generalizing them to all teacher candidates. Within some studies preservice teachers' conceptions of teaching and learning vary considerably.

Implications for Teacher Educators

Within these studies, researchers suggest a number of implications, some of which

conflict (For a summary of studies, see Table 4). For example, some researchers (Weinstein, 1988; Mahlios et al., 1995; Schmidt et al., 1990) recommend that teacher educators challenge and provide candidates with feedback about their beliefs. So that dysfunctional views are directly confronted, candidates are furnished with experiences that are in opposition to their beliefs. They are then encouraged to make comparisons between their beliefs and program views.

Other researchers (Holt-Reynolds, 1992; Harrington et al., 1995) suggest that teacher educators redirect candidates' beliefs rather than directly challenge them. From this perspective, an extended conversation would range over a number of courses and experiences. Although the means differ, the aim of those who advocate either of these two positions is essentially the same. The aim is to help preservice teachers construct an organized and detailed understanding of research based practices that promote the greatest amount of learning most of the time.

Still, various socialization and life history researchers posit that preservice teachers' conceptions of teaching and learning are so deeply ingrained that teacher educators cannot alter them. Influenced by phenomenology, many of these teacher educators direct most of their attention toward helping preservice teachers become aware of their own beliefs and the influences that have helped to shape them.

As one might imagine, teacher education looks quite different from each of these three perspectives. In a study conducted by Holt-Reynolds (1992), for instance, can lidates believed that lecture enables active learning if it is interesting. From the perspective in which students' beliefs are directly challenged, teacher educators would provide candidates with experiences

that conflict with their conceptions of active learning. An instructor might begin by having candidates describe differences between instruction that is active and passive. The instructor could then teach candidates a topic with which they have had limited exposure using lecture. Likewise, the instructor could teach a correspondingly unfamiliar topic using a constructivist approach. Following both kinds of instruction, candidates could be given problem solving tasks to assess their knowledge of the topics. Further, as a class, candidates could analyze the ways in which the two approaches differed, and how the approaches affected their ability to solve problems. Based on this analysis, candidates could then be asked to reexamine and modify their initial descriptions of what makes instruction active or passive.

In contrast to an approach that confronts candidates' beliefs, teacher educators who view their work as one of redirection would not dismiss the notion of interest but would simply work to change the emphasis preservice teachers place on it over time. The emphasis would shift toward planning learning activities that facilitate engagement in higher cognitive tasks. The reason for this shift is that with a focus on engagement rather than interest, students are much more likely to process course content because they are active. Nevertheless, students often do find the subject matter interesting when they are engaged.

Compared with preceding approaches, the scenario from the Holt-Reynolds study would look quite different from the perspective of phenomenology. A teacher educator with this view would endeavor to help preservice teachers understand their own beliefs, and would not focus on changing their emphasis on interest. Learning to teach would be viewed as a personal endeavor that is closeup, something teacher candidates do that is deeply personal (Carter & Doyle, 1996). Each candidate, therefore, would be encouraged to examine the

source of this belief, and to find his or her own best way in a supportive environment (Zeichner, 1983).

In order for teacher educators to develop effective interventions to address teacher candidates' conceptions of teaching and learning, studies are needed that investigate what candidates attend to and learn when various kinds of instruction are used to teach course content. In other words, what meaning do teacher candidates make of subject matter when it is represented using various means, and how does that affect what they learn? Furthermore, are some instructional interventions better at the beginning or end of candidates' programs based on their stage of teacher development? Answers to these questions will help to solve some of the most pressing debates within teacher education.

Table 1.

Teacher Candidates' General Orientations to Teaching and Education

Study	Sample Size	Data Sources	Conceptions
Book, Byer, & Freeman, 1983	N=473	Questionnaire	Highly confident; expected to learn little; classroom experience valued; focused on students' self-concepts
Gurney, 1995	N=113	Questionnaire - allowed for metaphor construction	Variability in teacher candidates' beliefs
Mahlios, Marc, & Maxson, 1995	N=134	6-part questionnaire - allowed for metaphor construction	Planned to teach didactically; schools should be nurturant; children should be obedient; affective traits emphasized; development is genetic
Schmidt & Kennedy, 1990	n=476, writing; n=481, math; n=471, teaching responsibilities	Questionnaire (7-point Likert scale)	Wide diversity of beliefs that included both function and process
Weinstein, 1988	N=118	33-item questionnaire	Unrealistic optimism
West, 1986	N=545	Questionnaire	Highly confident; classroom experience valued; oriented toward helping children

Table 2.

Perspectives on Diversity and Multicultural Education

Study	Sample Size	Data Sources	Conceptions
Avery & Walker, 1993	N=152	Responded to 2 questions in writing	Limited awareness of inequity, i.e., simplistic responses; ethnic disparity in achievement tied to culture; gender disparity in achievement tied to societal attitudes; school seen as creating disparity for gender more than for ethnicity
Barry & Lechner, 1995	N=73	3-part questionnaire	Limited knowledge of research findings; doubted abilities; desired more knowledge
Harrington & Hathaway, 1995	N=27	Structured computer conferencing activity	Varied beliefs, i.e., multiple view points important; doubted abilities; saw instructional implications; confusion about issues/ actions/implications

(continued)

Table 2. (Continued)

Perspectives on Diversity and Multicultural Education

Study	Sample Size	Data Sources	Conceptions
Goodwin, 1994	N=80	Open-ended questionnaire	Varied beliefs ranging from superficial to meaningful; reactive education dependent on context
Lindblad & Prieto, 1992	N=1029; n=671	Survey (subsample)	The 34 teachers were middle class, traditional, patriarchal; did not relate with working class perspectives of resistance
McCall, 1995	N=2	Class session audiotapes, researcher's journal, students' journals, responses to analysis	Limited awareness of inequity
Ross, 1992	N=6	Research paper, 3 reaction papers, personal theory paper, journal entries, observations, interviews	Limited knowledge of research findings; doubted abilities; cultural deficits due to homes; recognized complexity; interventions tied to attitudes not actions; experience in homogeneous setting desired

Table 3.

Elementary and Secondary Contrasts

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
Avery & Walker, 1993	n=99, elementary; n=53 secondary	Responded to 2 questions in writing	Less aware than secondary of sources of ethnic/gender disparity in achievement; less complex answers	More aware than elementary of sources of ethnic/gender disparity in achievement; more complex answers
Book, Freeman, 1986	n=174, elementary; n=178, secondary	6-section questionnaire with 210 questions	Child-centered; focus on social dynamics; service orientation; value knowledge base more than secondary; content area courses & experiences in schools valued	Subject matter and service oriented; K-12 experiences valued; content area courses/ experiences in schools valued; more confident than elementary

(continued)

BEST COPY AVAILABLE

Table 3. (Continued)

Elementary and Secondary Contrasts (Continued)

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
Weinstein, 1989	n=81, elementary/ early childhood; n=32 secondary	Open-ended and fixed-response questionnaire	Unrealistic optimism; self-ratings high on relationships and low on instruction; good teachers viewed in terms of relationships; enjoy children; no focus on learning strategies & understanding	Unrealistic optimism; self-ratings equal for management, relationships, and instruction; good teachers viewed in terms of relationships and subject matter knowledge; confident; no focus on learning strategies and understanding (continued)

Table 3. (Continued)

Elementary and Secondary Contrasts (Continued)

Study	Sample Size	Data Sources	Conceptions (Elementary)	Conceptions (Secondary)
West, 1986	n=188, elementary; n=170 secondary	Questionnaire	Child-centered; service motive; want to be remembered for increasing achievement and self-esteem, enthusiasm and caring; experience in schools valued	View teaching as a means to apply subject knowledge; service motive; want to be remembered for increasing achievement and self-esteem, enthusiasm and caring; experience in schools valued; more confident than elementary

Table 4.

Implications for Teacher Education

Study	Implications
Avery & Walker, 1993	Address impact of race, social class, gender on learning; make connections between social structures, schooling, and the complex interaction of variables
Barry & Lechner, 1995	Integrate multicultural education throughout program; emphasize cooperation not competition; use authentic evaluation and hands-on experience
Book, Byer & Freeman, 1983	Emphasize the structure of subject matter disciplines to prevent students from focusing on self-concept; teach students to organize/teach content for student learning, and use evaluation as a means to strengthen student learning; stress value of professional preparation and help candidates see what they do not know
Book & Freeman, 1986	Provide early field experiences for secondary majors; require more science/math for elementary majors with limited secondary course work; be sensitive to differences in the child-centered vs. subject matter focus of elementary and secondary majors; attend to candidates' levels of commitment
Goodwin, 1994	Integrate powerful experiences/dialogue; better assess student teaching sites; help candidates view multicultural education as a guide for decision making with all student populations
Gurney, 1995	None

(continued)

Table 4. (Continued)

Implications for Teacher Education

Study	Implications
Harrington & Hathaway, 1995	Redirect rather than wipe out candidates' beliefs; conversations must extend over several courses and experiences
Lindbald & Prieto, 1992	Use a biographical approach so that candidates "reflect upon their own particular experiences of schooling". Help candidates "recognize the impact of different experiences and rationalities among their students" (p. 469).
Mahlios, Marc & Maxson, 1995	Assess candidates' conceptions/provide them with feedback about their conceptions; make explicit how candidates' conceptions compare/contrast with program views; use conceptions as spring board; directly challenge dysfunctional viewsMcCall, 1995Use learning experiences facilitate candidates' awareness of own experiences influencing race, gender, class; have candidates explain conceptions/express concerns
Powell, 1992	Help nontraditional candidates refine existing strategies and identify those that are inappropriate; help traditional candidates critically evaluate instructional practices of former secondary teachers
Ross, 1992	Intervention of supervisor essential during student teaching; help students to see specific actions associated with equity

(continued)

Table 4. (Continued)

Implications for Teacher Education

Study	Implications
Schmidt & Kennedy, 1990	Candidates need not form beliefs, but alter existing ones; challenge candidates' beliefs; focus on depth rather than breath so candidates will do the same
Weinstein, 1989	Have candidates articulate beliefs; provide them with alternative conceptions; temper unrealistic optimism with more realistic expectations; have well-defined themes to help students organize their knowledge; be aware of students' conceptions
Weinstein, 1988	Increase program length/rigor; emphasize diagnosis/remediation upon failure in methods courses; advocate cohort experiences and encourage comparisons of background experiences so students see that they are like their peers
West, 1986	Same as Book & Freeman, 1986

BEST COPY AVAILABLE

References

Artiles, A. J., Mostert, M. P., Tankersley, M. (1994). Assessing the link between teacher cognitions, teacher behaviors, and pupil responses to lessons. Teaching and Teacher Education, 10(5), 465-481.

Ausubel, D. P. (1968). Educational psychology: A cognitive view. New York, NY: Holt, Rinehart and Winston, Inc.

Avery, P. G. & Walker, C. (1993). Prospective teachers' perceptions of ethnic and gender differences in academic achievement. Journal of Teacher Education, 44(1), 27-37.

Barry, N. H., & Lechner, J. V. (1995). Preservice teachers' attitudes about and awareness of multicultural teaching and learning. Teaching and Teacher Education, 11(2), 149-161.

Book, C. L., & Freeman, D. J. (1986). Differences in entry characteristics of elementary and secondary teacher candidates. Journal of Teacher Education, 37(2), 47-51.

Brousseau, B., & Freeman, D. (1984). Entering teacher candidate interviews, Fall, 1982. (Pro. Eval. Series No. 5). East Lansing: Michigan State University, The Office of Program Evaluation, College of Education.

Bullough, R. V., Jr. (Draft, July, 1995). Becoming a teacher: Self and the social location of teacher education. The International Handbook of Teachers and Teaching.

Calderhead, J. (Ed.). (1987). Exploring teachers' thinking. London, England: Cassell Educational Limited.

Calderhead, J. (Ed.). (1988). Teachers' Professional Learning. Philadelphia, PA: The Falmer Press.

Calderhead, J., & Robson, M. (1991). Images of teaching: Student teachers' early conceptions of classroom practice. Teaching and Teacher Education, 7, 1-8.

Carter, K., & Doyle, W. (1996). Personal narrative and life history in learning to teach. In J. Sikula, T. J. Buttery, & E. Guyton, (Eds.), Handbook of research on teacher education. New York: Macmillan Library Reference USA.

Clift, R. (1987). English teacher or English major: Epistemological differences in the teaching of English. English Education, 19, 229-236.

Derry, S. J. (1996). Cognitive schema theory in the constructivist debate. Educational Psychologist, 31, 163-74.

Eggen, P., Kauchak, D., Winitzky, N., Jensen, J., & Hadden, J. (1997, April). An exploratory study of conceptual change in an introductory educational psychology course. Paper presented at the American Education Research Association, Chicago, IL.

Fosnot, C. T. (Ed.). (1996). Constructivism: Theory, perspectives, and practice. New York: Teachers College Press.

Gelman, R. (1996). Constructivism and supporting environments. In D. Tirosh (Ed.), Implicit and explicit knowledge: An educational approach (pp. 55-82). Norwood, NJ: Ablex Publishing Corporation.

Goodwin, A. L. (1994). Making the transition from self to others: What do preservice teachers really think about multicultural education? Journal of Teacher Education, 45(2), 119-131.

Grossman, P. (1990). The making of a teacher: Teacher knowledge and teacher education. New York, NY: Teachers College Press.

Grossman, P., & Richert, A. (1988). Unacknowledged knowledge growth: A re-examination of the effects of teacher education. Teaching and Teacher Education, 4(1), 53-62.

Gurney, B. F. (1995). Tugboats and tennis games: Preservice conceptions of teaching and learning revealed through metaphors. Journal of Research in Science Teaching, 32(6),

569-583.

Harrington, H. L., & Hathaway, R. S. (1995). Illuminating beliefs about diversity. Journal of Teacher Education, 46(4), 275-284.

Hollingsworth, S. (1989). Prior beliefs and cognitive change in learning to teach. American Educational Research Journal, 26(2), 160-189.

Holt-Reynolds, D. (1991). Personal history-based beliefs as relevant prior knowledge in course work. American Educational Research Journal, 29(2), 325-349.

Mahlios, M., & Maxson, M. (1995). Capturing preservice teachers' beliefs about schooling, life, and childhood. Journal of Teacher Education, 46(3), 192-199.

McCall, A. L. (1995). Constructing conceptions of multicultural teaching: Preservice teachers' life experiences and teacher education. Journal of Teacher Education, 46(5), 340-351.

Murray, F. B. (Ed.). (1996). The teacher educator's handbook: Building a knowledge base for the preparation of teachers. San Francisco: Jossey-Bass.

Powell, R. R. (1992). The influence of prior experiences on pedagogical constructs of traditional and nontraditional preservice teachers. Teaching and Teacher Education, 8(3), 225-238.

Resnick, L. (1989). Introduction. In L. Resnick (Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 1-24). Hillsdale, NJ: Lawrence Erlbaum Associates.

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula, T. J. Buttery, & E. Guyton (Eds.), Handbook of Research on Teacher Education (pp. 102-119). New York, NY: Macmillan Library Reference USA.

Ross, D. D., & Smith W. (1992). Understanding preservice teachers' perspectives on

diversity. Journal of Teacher Education,43(2), 94-103.

Schmidt, W. H., & Kennedy, M. M. (1990). Teachers and teacher candidates' beliefs about subject matter and about teaching responsibilities (Report No. NCRTL-RR-90-4). East Lansing, MI: National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 320 902)

Sikula, J., Buttery, T. J., & Guyton, E. (Eds.). (1996). Handbook of research on teacher education: A project of the Association of Teacher Educators (2nd ed.). New York, NY: Macmillan Library Reference USA.

Weinstein, C. S. (1988). Preservice teachers' expectations about the first year of teaching. Teaching and Teacher Education, 4(1), 31-40.

Weinstein, C. S. (1989). Teacher education students' preconceptions of teaching. Journal of Teacher Education, 40, 53-60.

West. B. (1986). Profiles of entering Michigan State University teacher education students: 1985-1986 academic year (Pro. Eval. Series No. 12). East Lansing: Michigan State University, The Office of Program Evaluation, College of Education.

Winitzky, N., & Kauchak, D. (1997). Constructivism in teacher education: Applying cognitive theory to teacher learning. In V. Richardson (Ed.), Constructivist teacher education: Building new understandings. Washington, DC: The Falmer Press.

Zeichner, K. M. (1983). Alternative paradigms of teacher education. Journal of Teacher Education, 34(3), p. 3-9.